

AI and Machine Vision Revolutionize Tire Inspection Systems Amid Growing EV and AV Demand

Demand for tire inspection system is rising as EVs & AVs evolve with AI & laser tech enhancing quality, efficiency & safety to meet next-gen manufacturing needs

NEWARK, DE, UNITED STATES, April 30, 2025 /EINPresswire.com/ -- The global [Tire Inspection](#)

[System Market](#) is undergoing a significant transformation, driven by rapid advancements in artificial intelligence (AI), machine vision, laser scanning, and predictive analytics. Valued at USD 238.6 million in 2025, the market is projected to grow at a CAGR of 3.5%, reaching USD 336.6 million by 2035, according to a new industry report.

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AI-driven tire inspection is no longer optional—it's a competitive necessity as EVs and AVs redefine quality expectations in global markets.”

*opines Nikhil Kaitwade,
Associate Vice President at
FMI*

As tire manufacturing adapts to accommodate the increasing complexity of electric and autonomous vehicles, demand for advanced inspection systems has surged. Emerging technologies such as AI-based glue insertion prediction, defect detection, and high-speed laser scanning

are revolutionizing inspection processes. These innovations are not only reducing human error but also increasing throughput, ensuring consistency, and boosting the quality of finished products.

Additionally, the shift in tire design requirements such as the need for higher durability and resilience calls for state-of-the-art inspection tools that can adapt to a variety of materials, tread patterns, and internal structures. As OEMs and tier-1 suppliers ramp up production to support next-generation vehicles, the role of tire inspection systems becomes even more critical to maintaining global quality and safety standards.

Despite the technological promise, many small and mid-sized tire manufacturers face barriers to adoption due to the high initial costs associated with installing and integrating modern inspection systems. Tailoring these systems to legacy production environments often increases implementation complexity and drives up operational costs, especially in budget-sensitive markets like Latin America, South Asia, and parts of Eastern Europe.

Report available at <https://www.futuremarketinsights.com/report-sample#5245502d47422d3138363738>

Report covers & includes:

The report delivers comprehensive insights into:

- Market size and forecast (2025–2035)
- Key growth drivers and restraints
- Regional market performance
- Competitive landscape and profiles of key players
- Technological trends including AI, machine vision, and predictive maintenance
- SWOT and PESTEL analysis
- Strategic recommendations for new entrants and existing players

Key market drivers & restraints:

Growth in EVs and AVs, coupled with increasingly stringent safety standards and innovation in inspection technologies, are key factors driving market momentum. The market is also benefiting from increased automation in tire production lines.

Market challenges & opportunities:

A major hurdle remains the substantial capital expenditure required for deploying advanced inspection systems. Beyond the procurement cost, manufacturers must account for retrofitting existing lines, integrating with MES systems, and ensuring compliance with ISO standards.

Furthermore, the complexity of these systems demands high customization, leading to longer lead times and the need for robust project management—something smaller players may struggle to manage without external support or joint ventures.

Report highlights & key findings:



AI-enabled tire inspection solutions now offer real-time defect prediction, helping manufacturers identify irregularities such as sidewall damage, belt separation, or foreign object inclusion before they lead to product failure.

These tools also enable predictive analytics, allowing maintenance schedules to be optimized based on data trends rather than fixed intervals. This minimizes downtime and improves production continuity across high-output manufacturing lines.

However, several challenges hinder widespread adoption:

Many established tire plants still operate decade-old machinery that lacks the interfaces required for seamless AI or sensor integration. Bridging these gaps often demands middleware solutions or even partial hardware overhauls.

This raises concerns not just around cost but also operational risk during transition phases. Downtime during integration can affect delivery timelines and productivity, making ROI harder to justify in the short term.

Key challenges include:

- Tire Inspection System Market to reach USD 336.6 Million by 2035
- CAGR (2025–2035) projected at 3.5%
- High capital investment and system complexity impede adoption in mid-tier markets
- AI and predictive maintenance are becoming industry standards
- Integration challenges with legacy equipment remain a barrier
- Optical sensors demand frequent calibration and skilled operators
- Data privacy and cybersecurity are emerging concerns in connected systems

For more insights, visit: <https://www.futuremarketinsights.com/reports/tire-inspection-system-market>

Despite these challenges, the benefits of AI-driven inspection systems are becoming increasingly apparent:

While automation reduces labor requirements, manual calibration of high-precision optical systems is still essential. Operators must possess expertise in mechanical setup, image interpretation, and software diagnostics.

This creates a dependency on a limited talent pool, especially in emerging regions where technical training programs are scarce. Downtime due to miscalibration or sensor misalignment also affects overall equipment efficiency.

Addressing these challenges requires a multi-pronged approach:

With cloud-based analytics and real-time connectivity, cybersecurity becomes a critical issue. Unauthorized access to production data could lead to IP theft, production sabotage, or regulatory breaches.

Tire manufacturers must invest in robust firewalls, encryption protocols, and access controls to protect both operational continuity and sensitive customer data shared across supply chains.

Key players in tire inspection technology include:

- YXLON International GmbH: Specializes in X-ray inspection systems with advanced automation features.
- Micro-Poise Measurement Systems: Offers high-speed dynamic balancing and uniformity testing systems for tires.
- CyXplus SA: Known for precision X-ray and 3D tomography solutions tailored to the tire and rubber industry.
- Alfamation Global: Integrates optical inspection with industrial automation for customized tire testing setups.

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Manufacturers need to maintain scheduled service cycles and stock up on sensor parts, adding to the total cost of ownership. Lack of preventive maintenance can cause cascading failures across integrated systems.

Regional market dynamics:

- North America: High adoption driven by EV expansion and quality control mandates
- Latin America: Growth hindered by capital limitations and lack of skilled labor
- Western Europe: Strong market for AI-integrated systems in premium tire production
- Eastern Europe: Slow adoption due to outdated infrastructure
- East Asia: Rapid growth in China, South Korea, and Japan fueled by smart factories
- South Asia & Pacific: Emerging interest but limited by investment capacity
- Middle East & Africa: Early-stage market with niche growth in logistics-related sectors

For more insights on the future of tire inspection technology, visit:

<https://www.futuremarketinsights.com/industry-analysis/responsible-resource-management-and-safety>

Source: Future Market Insights, "Responsible Resource Management and Safety in the Tire Industry"

By Technology:

- Camera Based
- X-Ray Based
- Computer Vision Based

By End Use:

- MRO Centres
- Automobile Assembling Facility

By Region:

- North America
- Latin America
- Western Europe
- Eastern Europe
- South Asia and Pacific
- East Asia
- Middle East and Africa

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The [fire hydrant system market](#) is projected to reach approximately USD 5 billion by 2035, at a CAGR of 4.8%.

The [Composting Equipment industry](#) valuation is expected to grow at a steady rate, with an estimated value of USD 133.3 million in 2025, to reach approximately USD 189.9 million by 2035, growing at a CAGR of 3.6%.

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